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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,991	01/28/2002	Hiroiyuki Miwa	SON-1351/DIV	3294

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EXAMINER

GEBREMARIAM, SAMUEL A

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant(s)

10/055,991

MIWA, HIROYUKI

Examiner

Samuel A Gebremariam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect can be deferred until the application is allowed by the examiner.
2. Figures 4A-4C and 5A-5C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

### ***Specification***

3. The disclosure is objected to because of the following informalities: page 18, line 23 the word "form" is a typographical error.

The amendment replacing paragraphing beginning at page 2, line 5, paragraph 5, line 1 call attention to reference figure "A", which does not exist in the drawings; the amendment replacing paragraphing beginning at page 16, line 9, on line 8, the word "correct" is a typographical error.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "wherein said collector... is formed directly under said link base layer" is considered new matter because the specification describes the collector is formed under the base layer (12) (see fig. 2).

### ***Double Patenting***

6. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

7. Claim 7 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 5,824,589. This is a double patenting rejection.

Claim 7 of the present application is exactly the same claim 1 of prior U.S. patent No. 5,824,589. Refer to columns 7 and 8 of patent No. 5,824,589.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 7, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Miwa et al. (US patent No. 5,856,228).

Regarding claim 7, Miwa et al. teach (figs. 8a-8c) a method of fabricating a bipolar transistor comprising the steps of: forming on a semiconducting substrate (151) a first insulating film (162) having a pattern in which the surface of the semiconducting substrate is partially exposed from the first insulating film; sequentially forming a first conductive film (161) and a second insulating film (154) over the surface of the semiconducting substrate formed with the first insulating film, and then forming an opening portion (165) so as to expose the surface of the semiconducting substrate (151); forming a third insulating film (163) on the opening portion and the conductive film; forming a first impurity diffusion layer (156) having a first conducting type by applying ion implantation (col. 11, lines 5-18) to the semiconducting substrate at a first energy through the third insulating film; forming a second impurity diffusion layer (157) having the first conducting type by applying ion implantation to the semiconducting substrate at a second energy; forming a third impurity diffusion layer (155) having the first conducting type in the semiconducting substrate connected to the first conductive layer (161); forming side walls (164) made of a fourth insulating layer on side walls of the opening portion of the semiconducting substrate in which the first, second and third impurity diffusion are formed; forming a second conductive film (168) in the opening

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portion so as to be connected to the first impurity diffusion layer(156); and forming a fourth impurity diffusion layer (158) having a second conducting type in the second impurity diffusion layer by ion implantation (col. 11, lines 45-52) applied through the second conductive layer (157).

Since Miwa et al. use different ion implantation steps, the ion implantation steps to form diffusion layers (156) and (157) inherently have first and second energy.

Regarding claim 9, Miwa et al. teach the entire claimed process of claim 7 above including the first energy, is lower than the second energy.

Since the second diffusion layer is deeper than the first diffusion in the process of Miwa, the first energy is inherently lower than the second energy.

Regarding claim 10, Miwa et al. teach (figs. 8a-8c) a method of fabricating a bipolar transistor comprising: forming a graft base layer (155) from a first impurity diffusion layer created by ion implantation, wherein the graft base layer is of a first conducting type and is formed in a semiconductor substrate (151); forming a first conductive film (161) on the semiconductor substrate which is connected to the graft base layer (155); forming an opening (165) in the first conductive film; forming a link base layer (156) from a second impurity diffusion layer created by ion implantation, wherein the link base layer is of the first conducting type, is formed in a portion of the semiconductor substrate which is exposed by the opening portion (165), and is connected to the graft base layer; forming a base layer (157) from a third impurity diffusion layer, wherein the base layer is of the first conducting type, is formed in the semiconductor substrate, and is formed to contain the link base layer (156); forming

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side walls (164) in the opening portion from an insulating film, the side walls defining a central aperture (166); and forming an emitter (158) from a fourth impurity diffusion layer created by ion implantation, wherein the emitter is of a second conducting type (n), is formed in a portion of the semiconducting substrate exposed by the central aperture (166), is surrounded by the side walls, and is formed in the base layer; wherein the link base layer has a diffusion depth equal to or less than a diffusion depth of said emitter layer (fig. 8A).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miwa et al. in view of Gomi US patent No. 4,994,881.

Regarding claim 8, Miwa et al. teach the entire claimed process of claim 7 above including the second impurity diffusion layer is formed by ion implantation at the second energy.

Miwa et al. does not explicitly state a fifth impurity diffusion layer is formed under the first impurity diffusion layer by ion implantation at a third energy.

Gomi teaches forming a diffusion impurity layer (55) under a first impurity region (53) by ion implantation (col. 4, lines 60-69).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate forming the diffusion layer taught by Gomi in the process of Miwa et al. in order to form a diffusion suppression region (col. 5, lines 42-52).

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-D and N are cited as being related to bipolar transistor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Admassu Gebremariam whose telephone number is 703 305 1913. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Samuel Admassu Gebremariam  
July 14, 2003

Samuel Admassu Gebremariam  
Primary Examiner  
